

# GUEST COLUMN



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Chairman  
Bacteriology

When microbiology is mentioned, some may not think immediately of its relationship to agriculture or of the contributions of microbiologists to the state's principal industry and to the welfare of its people. A discussion of some past and present activities of those in the Department of Bacteriology will help to demonstrate this relationship.

As early as 1914 bacteriological research was conducted in the Agricultural Experiment Station. From that date until his retirement in 1954, the late Dr. Casper Nelson was chairman of the department. His research resulted in publications in several areas of microbiology, including wilt resistance in flax, serological ranking of wheat hybrids, home canning, poultry diseases and nitrogen fixation.

During the 1931 botulism outbreak at Grafton in which 13 people died, Dr. Nelson had an active role in determining that home canned peas used in a salad were responsible for the deaths. Later he made trips to various parts of the state lecturing on food preservation and proper methods for home canning through the Extension Service.

In 1967, Dr. Nelson received the honorary degree of Doctor of Science from North Dakota State University, and the Health Center was named in his honor.

From one faculty member in 1914 and four in 1954, the department has grown to the present eight faculty members. In 1914, Bacteriology occupied one room in the basement of what is now Minard Hall. In 1975, the department moved to the new Van Es Laboratories with seven research laboratories, two teaching laboratories, an animal room, a media room and eight faculty offices.

These additional faculty members and improved facilities have made it possible to offer a greater variety of courses for students in several curricula, and to expand research activities that presently range from determining the quality of the state's drinking and recreational waters to investigating the enzymes of photosynthetic bacteria in an effort to better understand plant photosynthesis.

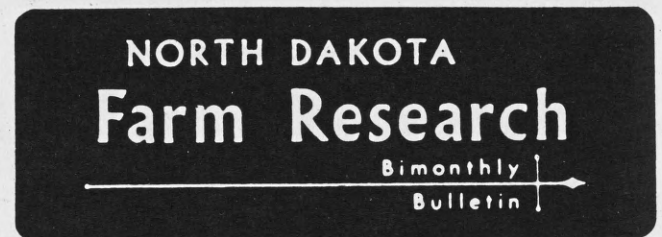
During the past seven years departmental faculty members have taught an average of more than 5,000 student credit hours per year, whereas less than 2,500 student credit hours were taught in 1967-68. In addition to those students enrolled in the curriculum in bacteriology, students majoring in many of the departments in the College of Agriculture, and those seeking careers in

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**On the Cover:** This electron microscope photograph shows leaf hairs and glands on the surface of the marijuana leaf, magnified 2,300 times. (Photo by NDSU Botany Department)



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resistance should be relatively independent of location and year.

Helminthosporium root rot is more severe in dry years and on droughty sites; under these conditions Helminthosporium root rot can cause serious losses (3, R. W. Stack, unpublished data). Since the pathogen survives well in dry soil, planting of wheat after wheat or barley during a series of dry seasons will especially favor build-up of the disease and potential serious loss. The best way to minimize loss is through rotation of small grains with other crops.

This information on the differential response of durums to root rot will be of more immediate use to farmers who grow durum year after year and who may have had problems with root rot in the past. Farmers may want to consider the different susceptibility of durum cultivars to root rot as one factor in selecting which durums to plant.

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civil engineering, food and nutrition including the dietetics option, medical technology, nursing and pharmacy regularly take one or more bacteriology courses. Others may take a bacteriology course to better understand the role of microorganisms in our individual and community life. Perhaps the more general awareness, in recent years, of the importance of protecting the environment, providing safer food and better health care has increased student interest in microbiology. Students working toward an M.S. degree in bacteriology have increased from six in 1967-68 to an average of 16 per year for the period 1971 through 1978.

Increased research effort has been directed during the past couple of years toward investigation of agricultural problems that have been identified by well-recognized scientists as those most deserving of special effort. Present department research projects within the Agricultural Experiment Station have as objectives the improvement of biological nitrogen fixation, development of more effective methods for waste disposal, development of better diagnostic and control methods for certain animal diseases and achievement of greater photosynthetic efficiency.

Research completed recently has dealt with the etiology of poultry necroses, Japanese beetle control with *Bacillus popilliae*, effects of insecticides on agriculturally important microbiological activities, effect of l-amino-D-proline on enzyme systems and bacterial vi-

ruses in farm animal waste lagoons. Completed multidisciplinary research has involved studies on water quality and land use in the Sheyenne River basin, evaluation of the utilization and management of water resources in the Lake Metigoshe watershed and assessment of environmental effects of a coal gasification plant in Dunn County, North Dakota. Results of research completed recently have been published in Applied Microbiology, the Canadian Journal of Microbiology, Plant and Soil, Poultry Science, Soil Biology and Biochemistry and North Dakota Research Reports.

The tradition of providing service for those in need established by Dr. Nelson has been continued in recent years. Dr. Mary Bromel frequently responds to the request that she determine the quality of drinking water. On several occasions she has met with citizen groups who were concerned about the quality of particular recreational lakes. Other members of the department may be called upon when contamination of food is suspected, when questions arise about inoculation of seed with nitrogen-fixing bacteria or even when someone wonders if microorganisms could be responsible for paint peeling from walls.

As we look to the future, we are committed, as are those in other disciplines at the University, to provide educational opportunities for students, to offer needed services when possible and to conduct research related to the needs of the state and region.